DIRECT TESTIMONY

of

SHEENA KIGHT-GARLISCH

Finance Department

Financial Analysis Division

Illinois Commerce Commission

Mt. Carmel Public Utility Company

Proposed General Increase in Rates for Delivery Service

Docket No. 07-0357

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WITNESS IDENTIFICATION

Q. Please state your name and business address.

A. My name is Sheena Kight-Garlisch. My business address is 527 East Capitol Avenue, Springfield, IL 62701.

Q. By whom are you employed and in what capacity?

A. I am employed by the Illinois Commerce Commission ("Commission") as a Senior Financial Analyst in the Finance Department of the Financial Analysis Division.

Q. Please describe your qualifications and background.

A. In May of 1998, I received a Bachelor of Business degree in Finance and Marketing from Western Illinois University in Macomb, Illinois. I earned a Master of Business Administration degree, with a concentration in Finance, also at Western Illinois University in May 2001. I have been employed by the Commission since January of 2001. I was promoted to Senior Financial Analyst on October 1, 2004.

Q. Please state the purpose of your testimony in this proceeding.

A. The purpose of my testimony and accompanying schedules is to present my analysis of the cost of capital of, and recommend an overall rate of return for Mt. Carmel Public Utility Company ("Mt. Carmel" or the "Company").

COST OF CAPITAL

Q. Please summarize your cost of capital findings.

A. I recommend a 9.35% overall rate of return for the Company, as shown on Schedule 5.01. The Company's proposed 9.491% overall rate of return for Mt. Carmel is also presented on Schedule 5.01.

Q. Why must one determine the overall rate of return for a public utility?

A. A primary goal of regulation is to properly balance the interests of a utility's ratepayers and investors. This is accomplished by minimizing the cost of reliable service to ratepayers while allowing utilities to earn a fair and reasonable rate of return on rate base.

Under the traditional regulatory model, ratepayer and shareholder interests are balanced when the Commission authorizes a rate of return on rate base equal to the public utility's overall cost of capital, as long as that overall cost of capital is not unnecessarily expensive. When public utilities charge rates that reflect an authorized rate of return that exceeds the cost of capital, consumers are encumbered with excessive prices. Conversely, when public utilities charge rates that reflect an authorized rate of return below the cost of capital, the financial integrity of the utility suffers, making it difficult for the utility to attract capital at a reasonable cost. Ultimately, the utility's inability to raise sufficient capital would impair service quality. Consumers are best served when the authorized rate of return on rate base equals the overall cost of capital.

In authorizing a rate of return on rate base equal to the overall cost of capital, all costs of service are assumed reasonable and accurately measured. If unreasonable costs continue to be incurred, or if any reasonable cost of service component is measured inaccurately, then the allowed rate of return on rate base will not balance ratepayer and investor interests.

Q. Mathematically define the overall cost of capital for a public utility.

A. The overall cost of capital equals the sum of the costs of the capital structure components (i.e., debt and equity) after weighting each component according to its proportion of total capitalization.

CAPITAL STRUCTURE

Q. What capital structure does the Company propose for determining the rate of return on rate base?

A. The Company proposes determining the rate of return on rate base on the December 31, 2005 pro-forma capital structure comprising 52.04% long-term debt and 47.96% common equity.[1] The Company's proposed capital structure appears on Schedule 5.01.

Q. What capital structure do you recommend for setting rates in this proceeding?

[1] Company's Schedule D-1, p. 1.

A. My proposed capital structure is shown on Schedule 5.01. I used a June 30, 2007 pro-forma capital structure comprising 55.37% long-term debt and 44.63% common equity.

Q. Should short-term debt be included in the capital structure of Mt. Carmel?

A. No. Mt. Carmel restructured all of its debt in August 2007. The Company obtained a loan for $8,000,000 to refinance current debt and to provide it with the capital needed for financing rate base investments.[2]

Q. Did you adjust the Company's proposed long-term debt balance?

A. Yes. The Company refinanced all of its long-term debt on August 17, 2007.[3] Therefore, I made a pro-forma adjustment to the Company's June 30, 2007 long-term debt balance to reflect the new long-term loan. The pro-forma June 30, 2007 long-term debt balance is presented on Schedule 5.02.

Q. Did you adjust the Company's proposed common equity balance?

A. Yes. I adjusted the common equity balance to reflect the actual amount outstanding as of June 30, 2007.[4] The common equity balance is presented on Schedule 5.01.

Q. Does capital structure affect the overall cost of capital?

A. Yes. Financial theory suggests capital structure will affect the value of a firm and, therefore, its cost of capital, to the extent capital structure affects the

[2] Order, Docket No. 07-0225, July 25, 2007.
[3] Company's responses to DR SK 1-02 and 2.01.
[4] Company's response to data request SK 1-03.

expected level of cash flows that accrue to outside parties (i.e., other than debt and stock holders). Employing debt as a source of capital reduces a company's income taxes,[5] thereby reducing the cost of capital. However, as reliance on debt as a source of capital increases, so does the probability of bankruptcy. As bankruptcy becomes more probable, expected payments to attorneys, trustees, accountants and other outside parties increase; simultaneously, the expected value of the income tax shield provided by debt financing declines. Beyond a certain point, a growing dependence on debt as a source of funds increases the overall cost of capital. Therefore, the Commission should not determine the overall rate of return from a utility's actual capital structure if the Commission concludes that capital structure adversely affects the overall cost of capital.

An optimal capital structure would minimize the cost of capital and maintain a utility's financial integrity. Unfortunately, determining whether a capital structure is optimal remains problematic because (1) the cost of capital is a continuous function of the capital structure, rendering precise measurement along each point of the range of possible capital structures problematic; (2) the optimal capital structure is a function of operating risk, which is dynamic; and (3) the relative costs of the different types of capital vary with dynamic market conditions. Consequently, one should determine whether the capital structure is consistent with the financial strength necessary to access the capital markets under most conditions, and if so, whether the cost of that financial strength is reasonable.

[5] The tax advantage debt has over equity at the corporate level is partially offset at the individual investor level. Debt investors receive returns largely in the form of current income (i.e., interest). In contrast, equity investors receive returns in the form of both current income (i.e., dividends) and capital appreciation (i.e., capital gains). Taxes on capital gains and dividend income are lower than taxes on interest income because capital gains and dividend tax rates are lower and taxes on capital gains are deferred until realized.

Towards that end, I compared the Company's pro-forma June 30, 2007 capital structure to industry standards. Standard & Poor's ("S&P") categorizes debt securities on the basis of the risk that a company will default on its interest or principal payment obligations. The resulting credit rating reflects both the operating and financial risks of a utility.[6] The mean total debt ratio of the electric and gas utilities that have an S&P "BBB" credit rating equals 51.13%. The mean common equity ratio for S&P BBB-rated electric and gas utilities equals 46.99%.[7] The above ratios are shown in Table 1 for comparative purposes.

Table 1: Capital Structure Ratios

	BBB-Rated Electric and Gas Companies		Range for BBB-Rated Utilities with Business Profile Score of		Mt. Carmel Pro-Forma June 30, 2007
	Mean	Standard Deviation	4	5	
Debt Ratio	51.13%	13.11%	52% - 62%	50% - 60%	55.37%
Equity Ratio	46.99%	13.57%			44.63%

Mt. Carmel's June 30, 2007 capital structure comprises a higher amount of debt and a lower amount of equity compared to electric and gas utilities. However, Mt. Carmel's June 30, 2007 total debt ratio and equity ratio are less than one standard deviation from the mean for electric and gas utilities.[8] In addition, Mt. Carmel's June 30, 2007 total debt ratio is within the ranges S&P publishes for BBB-rated utilities with business profiles of 4 and 5. According to S&P, an

[6] Standard & Poor's, *Utility Financial Statistics*, June 1999, p. 3.
[7] *S&P Utility Compustat II.*
[8] *S&P Utility Compustat II*.

obligor rated 'BBB' has an adequate capacity to meet its financial commitments.[9] The above suggests that the Company's pro-forma June 30, 2007 capital structure as presented by Staff on Schedule 5.01 is commensurate with an adequate degree of financial strength.

Q. Why did you compare Mt. Carmel's financial ratios to the S&P benchmarks for the business profile scores of 4 and 5?

A. A firm's market-required return on common equity is a function of its operating and financial risks. S&P business profile scores reflect the operating risk of a utility. S&P focuses on industry characteristics as well as the company's competitive position and management. A utility's business profile score is evaluated on a scale of one to ten. A rating of one denotes below average business risk, while a rating of ten denotes above average business risk.[10] I imputed an S&P business profile score for the Company since it does not have one. I began with domestic natural gas distributors, integrated gas companies and integrated utility companies listed in Standard & Poor's Ratings Direct.[11] Of these 212 gas and electric utilities, 10 are assigned a business profile score of "1"; 24 are assigned a business profile score of "2"; 25 are assigned a business profile score of "3"; 41 are assigned a business profile score of "4"; 56 are assigned a business profile score of "5"; 31 are assigned a business profile score of "6"; 13 are assigned a business profile score of "7"; and 12 are assigned a business profile score of "8". The average business profile scores of the 212 gas

[9] Standard & Poor's Ratings Direct, "Research: Standard & Poor's Ratings Definitions," December 10, 2002, p. 5.

[10] Standard & Poor's, "Research: New Business Profile Scores Assigned for U.S. Utility and Power Companies; Financial Guidelines Revised," June 2, 2004.

[11] "Issuer Ranking: U.S. Natural Gas Distributors And Integrated Gas Companies, Strongest to Weakest", July 16, 2007. Standard & Poor's Ratings Direct, "Issuer Ranking: U.S. Integrated Utility And Merchant Power Companies, Strongest to Weakest", July 24, 2007.

and electric utilities is 4.4.[12] Therefore, I concluded that a business profile score of 4 to 5 would be a reasonable estimate for Mt. Carmel.

Q. S&P currently does not rate Mt. Carmel's credit strength. Why did you compare Mt. Carmel's capital structure ratios to electric and gas utilities with 'BBB' credit ratings?

A. S&P publishes targets for the following three ratios (collectively, the "Benchmark Ratios") that it uses in its analysis of investor-owned utilities: (1) funds from operations ("FFO") interest coverage; (2) FFO to total debt; and (3) total debt to total capital. The Benchmark Ratios measure financial risk. The financial targets vary with the business profile score.[13] The S&P published targets for utilities with business profile scores of 4 and 5 indicate that Mt. Carmel's financial strength is consistent with a medium BBB credit rating. Table 2 presents Mt. Carmel's financial ratios for 2006.

[12] The median and the mode for the gas and electric utilities are 5.0.
[13] Standard & Poor's, "Research: New Business Profile Scores Assigned for U.S. Utility and Power Companies; Financial Guidelines Revised," June 2, 2004.

Table 2: S&P Utility Benchmark Credit Ratio Analysis

		S&P Financial Benchmark Ratio Targets	
		BBB-Rated Utilities	
Financial Benchmark Ratio	Mt. Carmel 2006	Business Profile Score	
		4	5
FFO Interest Coverage	2.8X	2.5X – 3.5X	2.8X – 3.8X
FFO to Total Debt	17.2%	12% - 20%	15% - 22%
Total Debt to Total Capital[14]	54.3%	52% - 62%	50 - 60%

COST OF LONG-TERM DEBT

Q. What is Mt. Carmel's embedded cost of long-term debt?

A. As shown on Schedule 5.02, Mt. Carmel's embedded cost of long-term debt for June 30, 2007 is 7.13%. My only adjustment to the Company's long-term debt cost calculation was to include unamortized debt expense.[15]

COST OF COMMON EQUITY

Q. What is your estimate of Mt. Carmel's cost of common equity?

A. My analysis indicates that the cost of common equity equals 12.10%

[14] The total debt was adjusted to reflect the new $8 million loan.
[15] Company's revised response to Staff data request SK 1-02.

Q. How did you measure the investor required rate of return on common equity for Mt. Carmel?

A. I measured the investor required rate of return on common equity for Mt. Carmel with discounted cash flow ("DCF") and risk premium models. Since the Company does not have market-traded common stock, DCF and risk premium models cannot be applied directly to the Company; for this reason, and to reduce measurement error, I applied both models to a sample of comparable utility companies ("Utility Sample").

Sample Selection

Q. How did you select a sample comparable in risk to Mt. Carmel?

A. According to financial theory, the market-required rate of return on common equity is a function of operating and financial risk. Thus, the method used to select a sample should reflect both the operating and financial characteristics of a firm. To form a sample comparable in risk to Mt. Carmel ("Utility Sample"), I began with a list of all domestic dividend paying publicly traded corporations assigned an industry number of 4911, 4922, 4923, 4924, 4931, or 4932 in the S&P *Utility Compustat II* database that have been assigned an S&P business profile score of 4 or 5. Second, I removed any company that had an S&P credit rating other than BBB+, BBB, or BBB-. Third, I removed any company that lacked Zacks growth rates. Next, I removed any company that lacked sufficient information to estimate beta. Finally, I eliminated any company that was in the process of being acquired by another company or acquiring a company of equal size. The remaining companies, Alliant Energy Corp., American Electric Power, Hawaiian Electric Industries, Idacorp Inc., Nisource Inc., Pepco Holdings Inc.,

Progress Energy Inc., Puget Energy Inc., Westar Energy Inc., Wisconsin Energy Corp., and Xcel Energy Inc., compose my Utility Sample.

DCF Analysis

Q. Please describe DCF analysis.

A. For a utility to attract common equity capital, it must provide a rate of return on common equity sufficient to meet investor requirements. DCF analysis establishes a rate of return directly from investor requirements. A comprehensive analysis of operating and financial risks is unnecessary to apply DCF analysis to a company since the market price of that company's stock already embodies the market consensus of those risks.

According to DCF theory, a security price equals the present value of the cash flow investors expect it to generate. Specifically, the market value of common stock equals the cumulative value of the expected stream of future dividends after each is discounted by the investor required rate of return.

Q. Please describe the DCF model with which you measured the investor required rate of return on common equity.

A. As it applies to common stocks, DCF analysis is generally employed to determine appropriate stock prices given a specified discount rate. Since a DCF model incorporates time-sensitive valuation factors, it must correctly reflect the timing of the dividend payments that stock prices embody. As such, incorporating stock prices that the financial market sets on the basis of quarterly

dividend payments into a model that ignores the time value of quarterly cash flows constitutes a misapplication of DCF analysis.

The companies in the Utility Sample pay dividends quarterly; therefore, I applied a constant-growth DCF model that measures the annual required rate of return on common equity as follows:

$$k = \frac{\sum_{q=1}^{4} D_{1,q}(1+k)^{1-[x+0.25(q-1)]}}{P} + g.$$

Where P ≡ the current stock price;

$D_{1,q}$ ≡ the next dividend paid at the end of quarter q, where q = 1 to 4;

k ≡ the cost of common equity;

x ≡ the elapsed time between the stock observation and next dividend payment dates, in years; and

g ≡ the expected dividend growth rate.

The expression $(1 + k_e)^{1-[x+0.25(q-1)]}$ is a future value factor that measures the value of each expected dividend ($D_{1,q}$) one year from the stock price measurement date. The DCF model above assumes that dividends will grow at a constant rate and that the market value of common stock (i.e., stock price) equals the sum of the discounted value of each dividend.

Q. How did you estimate the growth rate parameter?

A. Determining the market-required rate of return with the DCF methodology requires a growth rate that reflects the expectations of investors. Although the

current market price reflects aggregate investor expectations, market-consensus expected growth rates cannot be measured directly. Therefore, I measured market-consensus expected growth indirectly with growth rates forecasted by securities analysts that are disseminated to investors.

Zacks summarizes and publishes the earnings growth expectations of financial analysts employed by the research departments of investment brokerage firms. Zacks provides forward-looking, expectational estimates of earnings growth. Schedule 5.03 presents the analysts' growth rate estimates for the companies in the Utility Sample.

Q. How did you measure the stock price?

A. A current stock price reflects all information that is available and relevant to the market; thus, it represents the market's assessment of the common stock's current value. For the Utility Sample, I measured each company's current stock price with its closing market price from August 23, 2007. Those stock prices appear on Schedule 5.04.

Since current stock prices reflect the market's current expectation of both the cash flows the securities will produce and the rate at which those cash flows are discounted, an observed change in the market price does not necessarily indicate a change in the required rate of return on common equity. Rather, a price change may reflect investors' re-evaluation of the expected dividend growth rate. In addition, stock prices change with the approach of dividend payment dates. Consequently, when estimating the required return on common equity with the DCF model, one should measure the expected dividend yield and the

corresponding expected growth rate concurrently. Using a historical stock price along with current growth expectations or combining an updated stock price with past growth expectations will likely produce an inaccurate estimate of the market-required rate of return on common equity.

Q. Please explain the significance of the column titled "Next Dividend Payment Date" shown on Schedule 5.04.

A. Estimating year-end dividend values requires measuring the length of time between each dividend payment date and the first anniversary of the stock observation date. For the first dividend payment, that length of time is measured from the "Next Dividend Payment Date." Subsequent dividend payments occur in quarterly intervals.

Q. How did you estimate the next four expected quarterly dividends?

A. Most utilities declare and pay the same dividend per share for four consecutive quarters before adjusting the rate. Consequently, I assumed the current dividend rate will remain in effect for a minimum of four quarters and then adjust during the same quarter it changed during the preceding year; if the utility did not change its dividend during the last year, I assumed the rate would change during the next quarter. The average expected growth rate was applied to the current dividend rate to estimate the expected dividend rate. Schedule 5.04 presents the current quarterly dividends. Schedule 5.05 presents the expected quarterly dividends.

Q. Based on your DCF analysis, what is the estimated required rate of return on common equity for the Utility Sample?

A. My DCF analysis estimated that the required rate of return on common equity for the Utility Sample is 9.93%, as shown on Schedule 5.06. That result was derived from the growth rates presented on Schedule 5.03, the stock prices and dividend payment dates presented on Schedule 5.04, and the expected quarterly dividends presented on Schedule 5.05.

Risk Premium Analysis

Q. Please describe the risk premium model.

A. The risk premium model is based on the theory that the market-required rate of return for a given risk-bearing security equals the risk-free rate of return plus a risk premium that investors expect in exchange for assuming the risk associated with that security. Mathematically, a risk premium equals the difference between the expected rate of return on a risk factor and the risk-free rate. If the risk of a security is measured relative to a portfolio, then multiplying that relative measure of risk and the portfolio's risk premium produces a security-specific risk premium for that risk factor.

The risk premium methodology is consistent with the theory that investors are risk-averse. That is, investors require higher returns to accept greater exposure to risk. Thus, if investors had an opportunity to purchase one of two securities with equal expected returns, they would purchase the security with less risk. Similarly, if investors had an opportunity to purchase one of two securities with equal risk, they would purchase the security with the higher expected return. In

equilibrium, two securities with equal quantities of risk have equal required rates of return.

The Capital Asset Pricing Model ("CAPM") is a one-factor risk premium model that mathematically depicts the relationship between risk and return as:

$$R_j = R_f + \beta_j \times (R_m - R_f)$$

where R_j ≡ the required rate of return for security j;

R_f ≡ the risk-free rate;

R_m ≡ the expected rate of return for the market portfolio; and

β_j ≡ the measure of market risk for security j.

In the CAPM, the risk factor is market risk, which is defined as risk that cannot be eliminated through portfolio diversification. To implement the CAPM, one must estimate the risk-free rate of return, the expected rate of return on the market portfolio, and a security or portfolio-specific measure of market risk.

Q. How did you estimate the risk-free rate of return?

A. I examined the suitability of the yields on four-week U.S. Treasury bills and thirty-year U.S. Treasury bonds as estimates of the risk-free rate of return.

Q. Why did you examine the yields on U.S. Treasury bills and bonds as measures of the risk-free rate?

A. The proxy for the nominal risk-free rate should contain no risk premium and reflect similar inflation and real risk-free rate expectations to the security being

analyzed through the risk premium methodology.[16] The yields of fixed income securities include premiums for default and interest rate risk. Default risk pertains to the possibility of default on principal or interest payments. The federal government's fiscal and monetary authority makes securities of the United States Treasury virtually free of default risk. Interest rate risk pertains to the effect of unexpected interest rate fluctuations on the value of securities.

Since common equity theoretically has an infinite life, its market-required rate of return reflects the inflation and real risk-free rates anticipated to prevail over the long run. U.S. Treasury bonds, the longest term treasury securities, are issued with terms to maturity of thirty years; U.S. Treasury notes are issued with terms to maturity ranging from two to ten years; U.S. Treasury bills are issued with terms to maturity ranging from four weeks to six months. Therefore, U.S. Treasury bonds more likely incorporate within their yields the inflation and real risk-free rate expectations that drive, in part, the prices of common stocks than either U.S. Treasury notes or Treasury bills.

However, due to relatively long terms to maturity, U.S. Treasury bond yields also contain an interest rate risk premium that diminishes their usefulness as measures of the risk-free rate. U.S. Treasury bill yields contain a smaller premium for interest rate risk. Thus, in terms of interest rate risk, U.S. Treasury bill yields more accurately measure the risk-free rate.

[16] The real risk-free rate and inflation expectations compose the non-risk related portion of a security's rate of return.

Q. Given the similarity in the inflation and real risk-free rate expectations that are reflected in the yields on U.S. Treasury bonds and the prices of common stocks, does it necessarily follow that the inflation and real risk-free rate expectations that are reflected in the yields on U.S. Treasury bills and the prices of common stocks are dissimilar?

A. No. To the contrary, short and long-term inflation and real risk-free rate expectations, including those that are reflected in the yields on U.S. Treasury bills, U.S. Treasury bonds, and the prices of common stocks, should equal over time. Any other assumption implausibly implies that the real risk-free rate and inflation are expected to systematically and continuously rise or fall.

Although expectations for short and long-term real risk-free rates and inflation should equal over time, in finite time periods short and long-term expectations may differ. Short-term interest rates tend to be more volatile than long-term interest rates.[17] Consequently, over time U.S. Treasury bill yields are less biased (i.e., more accurate) but less reliable (i.e., more volatile) estimators of the long-term risk-free rate than U.S. Treasury bond yields. In comparison, U.S. Treasury bond yields are more biased (i.e., less accurate) but more reliable (i.e., less volatile) estimators of the long-term risk-free rate. Therefore, an estimator of the long-term nominal risk-free rate should not be chosen mechanistically. Rather, the similarity in current short and long-term nominal risk-free rates should be evaluated. If those risk-free rates are similar, then U.S. Treasury bill yields should be used to measure the long-term nominal risk-free rate. If not, some other proxy or combination of proxies should be used.

[17] Fabozzi, ed., The Handbook of Fixed Income Securities, Fifth Edition, Irwin, p. 827.

Q. Provide the current yield on 4-week U.S. Treasury bills and the current estimated yield on thirty-year U.S. Treasury bonds.

A. Four-week U.S. Treasury bills are currently yielding 4.25%. The estimated yield for thirty-year U.S. Treasury bonds equals 5.06%. Both estimates are derived from quotes for August 23, 2007.[18] Schedule 5.07 presents the published quotes and effective yields.

Q. Of the U.S. Treasury bill and bond yields, which is currently a better proxy for the long-term risk-free rate?

A. In terms of the gross domestic product ("GDP") price index, the Energy Information Administration ("EIA") forecasts the inflation rate will average 1.9% annually during the 2007-2030 period.[19] Global Insight forecasts the GDP price index will average 1.9% annually during the 2007-2037 period.[20] In terms of the consumer price index ("CPI"), the *Survey of Professional Forecasters* ("*Survey*") forecasts the inflation rate will average 2.5% during the next ten years.[21] EIA forecasts of real GDP growth imply the real risk-free rate will average 2.9% during the 2007-2030 period.[22] Global Insight forecasts of real GDP growth imply the real risk-free rate will average 2.6% during the 2007-2037 period.[23] The

[18] The Federal Reserve Board, *Federal Reserve Statistical Release: Selected Interest Rates, H.15 Daily Update*, www.federalreserve.gov/releases/H15/update, August 23, 2007.

[19] Energy Information Administration, *Annual Energy Outlook 2007*, Table 19, Macroeconomic Indicators, www.eia.doe.gov/oiaf/aeo/, February 2007.

[20] Global Insight, *The U.S. Economy: The 30-Year Focus, First Quarter 2007*, Table 1: Summary of the U.S. Economy.

[21] Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters*, www.phil.frb.org/files/spf/survq107.htm, May 14, 2007. The *Survey* aggregates the forecasts of approximately thirty forecasters.

[22] Energy Information Administration, *Annual Energy Outlook 2007*, Table 19, Macroeconomic Indicators, www.eia.doe.gov/oiaf/aeo/, February 2007.

[23] Global Insight, *The U.S. Economy: The 30-Year Focus, First Quarter 2007*, Table 1: Summary of the U.S. Economy.

Survey forecasts real GDP growth will average 3.0% during the next ten years.[24] Those forecasts imply a long-term, nominal risk-free rate between 4.6% and 5.6%.[25] Therefore, to the extent inflation and real GDP growth expectations coincide with EIA, Global Insight, and *Survey* forecasts, the U.S. Treasury bond yield more closely approximates the long-term risk-free rate. Therefore, I conclude that the U.S. Treasury bond yield is the better proxy for the long-term risk-free rate currently. It should be noted, however, that the estimate from using the U.S. Treasury bond yield contains an upward bias due to the inclusion of an interest rate risk premium associated with its relatively long term to maturity.

Q. Explain why the real risk-free rate and the GDP growth rate should be similar.

A. Risk-free securities provide a rate of return sufficient to compensate investors for the time value of money, which is a function of production opportunities, time preferences for consumption, and inflation. The real risk-free rate excludes the premium for inflation.[26] The real GDP growth rate measures output of goods and services without reflecting inflation expectations and, as such, also reflects both production and consumers' consumption preferences. Therefore, both the real GDP growth rate and the real risk-free rate of return should be similar since both

[24] Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters*, www.phil.frb.org/files/spf/survq107.html, February 13, 2007.

[25] Nominal interest rates are calculated as follows:

$$r = (1 + R) \times (1 + i) - 1.$$

where r ≡ nominal interest rate;
R ≡ real interest rate; and
i ≡ inflation rate.

[26] Brigham and Houston, *Fundamentals of Financial Management,* 8th edition.

are a function of production opportunities and consumption preferences without the effects of either a risk premium or an inflation premium.

Q. How was the expected rate of return on the market portfolio estimated?

A. The expected rate of return on the market was estimated by conducting a DCF analysis on the firms composing the S&P 500 Index ("S&P 500") as of July 6, 2007. That analysis used dividend information reported in the July 2007 edition of S&P's *Security Owner's Stock Guide* and closing market prices and growth rate estimates reported by Zacks on July 9, 2007. Firms not paying a dividend as of July 6, 2007, or for which Zacks growth rates were not available were eliminated from the analysis. The resulting company-specific estimates of the expected rate of return on common equity were then weighted using market value data from Zacks on July 9, 2007. The estimated weighted average expected rate of return for the remaining 385 firms, composing 84.52% of the market capitalization of the S&P 500, equals 13.38%.

Q. How did you measure market risk on a security-specific basis?

A. Beta measures risk in a portfolio context. When multiplied by the market risk premium, a security's beta produces a market risk premium specific to that security. I used Value Line's betas and a regression analysis to estimate the beta of the Utility Sample.

Value Line estimates beta for a security with the following model using an ordinary least-squares technique:[27]

$$R_{j,t} = a_j + \beta_j \times R_{m,t} + e_{j,t}$$

where $R_{j,t}$ ≡ the return on security j in period t;

$R_{m,t}$ ≡ the return on the market portfolio in period t;

a_j ≡ the intercept term for security j;

β_j ≡ beta, the measure of market risk for security j; and

$e_{j,t}$ ≡ the residual term in period t for security j.

A beta can be calculated for firms with market-traded common stock. Value Line calculates its betas in two steps. First, the returns of each company are regressed against the returns of the New York Stock Exchange Composite Index ("NYSE Index") to estimate a raw beta. The Value Line regression employs 259 weekly observations of stock return data. Then, an adjusted beta is estimated through the following equation:

$$\beta_{adjusted} = 0.35 + 0.67 \times \beta_{raw}.$$

The regression analysis applies an ordinary least-squares technique to the following model to estimate beta for a security or portfolio of securities:

$$R_{j,t} - R_{f,t} = \alpha + \beta (R_{m,t} - R_{f,t}) + \varepsilon_t$$

[27] Statman, Meir, "Betas Compared: Merrill Lynch vs. Value Line", *The Journal of Portfolio Management*, Winter 1981.

where $R_{j,t}$ ≡ the return on security *j* in period *t*;

$R_{f,t}$ ≡ the risk-free rate of return in period *t*;

$R_{m,t}$ ≡ the return on the market portfolio in period *t*;

α ≡ the intercept term for security *j*;

β ≡ beta, the measure of market risk for security *j*; and

ε_t ≡ the residual term in period *t* for security *j*.

The regression analysis beta estimate for the Utility Sample was calculated in three steps. First, the U.S. Treasury bill return was subtracted from the average percentage change in the sample's stock prices and the percentage change in the NYSE Index to estimate the portfolios' returns in excess of the risk-free rate. Second, the excess returns of the Utility Sample were regressed against the excess returns of the NYSE Index to estimate a raw beta. The regression analysis employs sixty monthly observations of stock and U.S. Treasury bill return data. Third, an adjusted beta is estimated through the following equation:

$$\beta_{adjusted} = 0.33743 + 0.66257 \times \beta_{raw}.$$

Q. What is the beta estimate for the Utility Sample?

A. As shown in Schedule 5.08, the average Value Line beta for the Utility Sample is 0.95.[28] The regression beta estimate for the Utility Sample is 0.78. The average of those two estimates is 0.86.

[28] The average beta is 0.945, rounded to 0.95. The Value Line Investment Survey, "Summary and Index," April 27, 2007, pp. 2-22.

Q. What required rate of return on common equity does the risk premium model estimate for the Utility Sample?

A. The risk premium model estimates a required rate of return on common equity of 12.22% for the Utility Sample. The computation of that estimate appears on Schedule 5.07.

Cost of Equity Recommendation

Q. Based on your entire analysis, what is your estimate of the required rate of return on the common equity for the Utility Sample?

A. A thorough analysis of the required rate of return on common equity requires both the application of financial models and the analyst's informed judgment. An estimate of the required rate of return on common equity based solely on judgment is inappropriate. Nevertheless, because techniques to measure the required rate of return on common equity necessarily employ proxies for investor expectations, judgment remains necessary to evaluate the results of such analyses. Along with DCF and risk premium cost of common equity analyses, I have considered the observable 6.28% rate of return the market currently requires on less risky A-rated long-term utility debt.[29] Based on my analysis, in my judgment the investor required rate of return on common equity for the Utility Sample is 11.08%.

[29] The Value Line Investment Survey, "Selection & Opinion," August 31, 2007.

Q. Please summarize how you estimated the investor-required rate of return on common equity for the Company.

A. First, I estimated the investor required rate of return on common equity for the Utility Sample, which is a simple average of the DCF-derived result (9.93%) and the risk premium-derived result (12.22%) for the Utility Sample, or 11.08%. The models from which the individual company estimates were derived are correctly specified and thus contain no source of bias. Moreover, I am unaware of bias in my proxy for investor expectations.[30] In addition, measurement error has been minimized through the use of a sample, since estimates for a sample as a whole are subject to less measurement error than individual company estimates.

Q. Are any adjustments to the cost of common equity necessary?

A. Yes. Liquidity costs arise from the probability and financial consequences of an investor's inability to sell an asset at the desired time at a predictable price. The Utility Sample comprises market-traded companies whose security prices do not reflect substantial liquidity costs. However, the value of small electric utilities, such as Mt. Carmel, typically reflect significant liquidity costs, which are largely due to the lack of a market for investments in such a company.

Q. How did you estimate the liquidity premium for Mt. Carmel's common equity?

A. A direct assessment of the liquidity premium in the cost of Mt. Carmel's common equity cannot be performed since the cost of common equity to small utilities is not directly observable. Thus, I based Mt. Carmel's liquidity premium on the

[30] Except as discussed above in regard to U.S. Treasury bond yields as proxies for the long-term risk-free rate.

approximately 102 basis point difference between the current 6.05% yield on one-month A2 commercial paper[31] and the current 7.07% interest rate on Mt. Carmel's loan.[32] Therefore, in my judgment, a fair rate of return on common equity for Mt. Carmel equals the cost of common equity for the Utility Sample, 11.08%, plus 102 basis points, or 12.10%.

Overall Cost of Capital Recommendation

Q. What are the overall costs of capital for Mt. Carmel?

A. As shown on Schedule 5.01, Mt. Carmel's overall cost of capital is 9.35%. The estimate incorporates a cost of common equity of 12.10%.

Q. Does this conclude your direct testimony?

A. Yes, it does.

[31] www.federalreserve.gov/releasese/cp/, August 17, 2007.

[32] Mt. Carmel's $8,000,000 loan rate is variable and was set on August 17, 2007. The variable rate is reset on the 17th of each month. (Company responses to Staff data requests SK 1-02 and SK 2-01.)

Mt. Carmel Public Utility Company

Staff's Proposed Overall Cost of Capital

Capital Component	Pro-Forma June 30, 2007 Balance	Capital Structure Ratio	Cost	Liquidity Premium	Weighted Cost
Long-Term Debt	$ 8,000,000	55.37%	7.13%		3.95%
Common Equity	$ 6,449,011	44.63%	11.08%	1.02%	5.40%
Total	$ 14,449,011	100%			9.35%

Company's Proposed Overall Cost of Capital

Capital Component	Adjusted December 31, 2005 Balance	Capital Structure Ratio	Cost	Liquidity Premium	Weighted Cost
Long-Term Debt	$ 8,000,000	52.04%	6.82%		3.55%
Common Equity	$ 7,373,774	47.96%	12.39%		5.94%
Total	$ 15,373,774	100%			9.49%

Docket No. 07-0357
ICC Staff Exhibit 5.0
Schedule 5.02

Mt. Carmel Public Utility Company

Embedded Cost of Debt

Line No.	Issue	Date Issued	Maturity Date	Original Principal Amount	Principal Amount Outstanding	Unamortized Debt Expense or Discount	Carrying Value	Interest Cost	Annual Amortization of Debt Expense or Discount	Annualized Interest	Embedded Cost
1	Bank Loan- 7.069%	8/17/07	8/17/12	$ 8,000,000	$ 8,000,000	$ 19,200	$ 7,980,800	$ 565,520	$ 3,836	569,356	
	Totals			$ 8,000,000	$ 8,000,000	$ 19,508	$ 7,980,800	$ 565,520	$ 3,836	$ 569,356	7.13%

Docket No. 07-0357
ICC Staff Exhibit 5.0
Schedule 5.03

Mt. Carmel Public Utility Company

Growth Rates

	Company	Zacks Earnings
1	Alliant Energy Corp.	6.00%
2	American Electric Power	4.67%
3	Hawaiian Electric Inds.	4.88%
4	IDACORP Inc.	6.00%
5	NiSource Inc.	3.50%
6	Pepco Holdings Inc.	6.67%
7	Progress Energy Inc.	4.40%
8	Puget Energy Inc.	5.50%
9	Westar Energy Inc.	4.50%
10	Wisconsin Energy Corp.	9.33%
11	Xcel Energy Inc.	4.83%

Mt. Carmel Public Utility Company

	Company	Current Dividend $D_{0,1}$	$D_{0,2}$	$D_{0,3}$	$D_{0,4}$	Next Dividend Payment Date	Stock Price
1	Alliant Energy Corp.	$0.288	$ 0.318	$0.318	$ 0.318	11/15/2007	$ 38.980
2	American Electric Power	0.390	0.390	0.390	0.390	12/10/2007	$ 46.240
3	Hawaiian Electric Inds.	0.310	0.310	0.310	0.310	12/10/2007	$ 21.100
4	IDACORP Inc.	0.300	0.300	0.300	0.300	11/30/2007	$ 32.910
5	NiSource Inc.	0.230	0.230	0.230	0.230	11/20/2007	$ 19.510
6	Pepco Holdings Inc.	0.260	0.260	0.260	0.260	9/29/2007	$ 26.670
7	Progress Energy Inc.	0.605	0.610	0.610	0.610	11/1/2007	$ 46.550
8	Puget Energy Inc.	0.250	0.250	0.250	0.250	11/15/2007	$ 23.790
9	Westar Energy Inc.	0.250	0.250	0.270	0.270	10/2/2007	$ 24.950
10	Wisconsin Energy Corp.	0.230	0.250	0.250	0.250	12/1/2007	$ 43.510
11	Xcel Energy Inc.	0.225	0.225	0.225	0.230	10/20/2007	$ 20.830

Mt. Carmel Public Utility Company

Expected Quarterly Dividends

Company	$D_{1,1}$	$D_{1,2}$	$D_{1,3}$	$D_{1,4}$
Alliant Energy Corp.	$ 0.318	$ 0.337	$ 0.337	$ 0.337
American Electric Power	0.408	0.408	0.408	0.408
Hawaiian Electric Inds.	0.325	0.325	0.325	0.325
IDACORP Inc.	0.318	0.318	0.318	0.318
NiSource Inc.	0.238	0.238	0.238	0.238
Pepco Holdings Inc.	0.260	0.277	0.277	0.277
Progress Energy Inc.	0.610	0.637	0.637	0.637
Puget Energy Inc.	0.250	0.264	0.264	0.264
Westar Energy Inc.	0.270	0.270	0.282	0.282
Wisconsin Energy Corp.	0.250	0.273	0.273	0.273
Xcel Energy Inc.	0.230	0.230	0.230	0.241

Docket No. 07-0357
ICC Staff Exhibit 5.0
Schedule 5.06

Mt. Carmel Public Utility Company

DCF- Cost of Equity Estimate

	Company	Cost of Equity Estimate
1	Alliant Energy Corp.	9.53%
2	American Electric Power	8.30%
3	Hawaiian Electric Inds.	11.27%
4	IDACORP Inc.	10.00%
5	NiSource Inc.	8.54%
6	Pepco Holdings Inc.	10.99%
7	Progress Energy Inc.	10.04%
8	Puget Energy Inc.	10.05%
9	Westar Energy Inc.	9.13%
10	Wisconsin Energy Corp.	11.89%
11	Xcel Energy Inc.	9.49%
	Average	9.93%

Mt. Carmel Public Utility Company

Risk Premium Analysis

Interest Rates as of August 23, 2007

U.S. Treasury Bills		U.S. Treasury Bonds	
Discount Rate	Effective Yield	Bond Equivalent Yield	Effective Yield
4.10%	4.25%	5.00%	5.06%

Risk Premium Cost of Equity Estimates

Treasury Bond

Risk-Free Rate		Beta		Risk Premium		Cost of Common Equity
5.06%	+	0.860	*	(13.38% - 5.06%)	=	12.22%

Mt. Carmel Public Utility Company

CAPM- Value Line Betas

Utility Sample

	Company		Value Line Beta
1	Alliant Energy Corp.		0.95
2	American Electric Power		1.35
3	Hawaiian Electric Inds.		0.75
4	IDACORP Inc.		1.05
5	NiSource Inc.		0.95
6	Pepco Holdings Inc.		0.90
7	Progress Energy Inc.		0.95
8	Puget Energy Inc.		0.85
9	Westar Energy Inc.		0.95
10	Wisconsin Energy Corp.		0.80
11	Xcel Energy Inc.		0.90
		Average	0.95